

**StorCase® Technology**  
**Data Silo®**  
**DS322**

*External FireWire-to-IDE  
Expansion Chassis*

**User's Guide**

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**Data Silo®**  
**DS322**  
*External FireWire-to-IDE*  
*Expansion Chassis*

**User's Guide**

**Part No. D89-0000-0201 A02      January 2003**



**StorCase Technology, Inc.**  
**17600 Newhope Street**  
**Fountain Valley, CA 92708-9885**  
**Phone (714) 438-1850      Fax (714) 438-1847**

## LIMITED WARRANTY

STORCASE TECHNOLOGY, Incorporated ("StorCase") warrants that its products will be free from defects in material and workmanship, subject to the conditions and limitations set forth below. StorCase will, at its option, either repair or replace any part of its product that proves defective by reason of improper workmanship or materials. Repair parts or replacement products will be provided by StorCase on an exchange basis, and will be either new or reconditioned to be functionally equivalent to new.

This warranty does not cover any product damage that results from accident, abuse, misuse, natural or personal disaster, external power surge or failure, or any unauthorized disassembly, repair or modification. StorCase will not be responsible for any software, firmware or other customer data stored within, or interfacing with a StorCase product.

### Duration of Warranty

**Seven-Year Warranty:** The following StorCase products are covered by this warranty for a period of seven (7) years from the original date of purchase from StorCase or its authorized reseller: all Data Express® removable device enclosures and all StorCase interface cables and accessories specifically intended for use with these products. Data Silo®, Data Stacker® and InfoStation® products are covered by this warranty for a period of seven (7) years, excepting the RAID controller, power supply, fan and blower components, which are covered by the three-year warranty described below.

**Three-Year Warranty:** The following StorCase products are covered by this warranty for a period of three (3) years from the original date of purchase from StorCase or its authorized reseller: all Rhino®JR external expansion chassis, all RhinoJR removable drive enclosures, and all RAID controller modules. In addition, the following components of the Data Express, Data Silo, Data Stacker, InfoStation products are subject to warranty for a period of three (3) years: all power supplies, fans and blowers.

### Warranty Claim Requirements

To obtain warranty service, the defective product must be returned to your local authorized StorCase dealer or distributor, or, with prior StorCase approval, to the StorCase factory service center.

For defective products returned directly to StorCase, a Return Material Authorization ("RMA") number must be obtained by calling StorCase Customer Service at (714) 445-3455. The RMA number must be prominently displayed on the outside of the return package. Shipments must be freight-prepaid and insured, and must include the product serial number, a detailed description of the problem experienced, and proof of the original retail purchase date. Products must be properly packaged to prevent damage in transit. Damage resulting from improper packaging will not be covered by this warranty. The StorCase factory service center is located at 17650 Newhope Street, Receiving Dock, Gate #4, Fountain Valley, CA 92780, U.S.A.

## Free Technical Support

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## Disclaimers

The foregoing is the complete warranty for the products identified above and supersedes all other warranties and representations, whether oral or written. StorCase expressly disclaims all warranties for the identified products, which are not stated herein, including, to the extent permitted by applicable law, any implied warranty of merchantability or fitness for a particular purpose. In no event will StorCase be liable to the purchaser, or to any user of a StorCase product, for any damages, expenses, lost revenues, lost savings, lost profits, or any other incidental or consequential damages arising from the purchase, use or inability to use a StorCase product, even if StorCase has been advised of the possibility of such damages.



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## Declaration of Conformity

**Company Name:** StorCase Technology, Inc.

**Corporate Office Address:** 17600 Newhope Street  
Fountain Valley, CA 92708

**Manufacturing Address:** 17600 Newhope Street  
Fountain Valley, CA 92708

**Product Name:** Data Silo DS322

**Model Number:** S30F103

Conforms to the following standards:

**EMC Directives:** EN 50081-1: 1992 Generic Emission  
(89/336/EEC) - EN 55022/CISPR22 Class A  
- EN 61000-3-2 Harmonic Current  
- EN 61000-3-3 Voltage Fluctuations and Flicker  
EN 55024: 1998 ITE Immunity  
- IEC 61000-4-2 - IEC 61000-4-5  
- IEC 61000-4-3 - IEC 61000-4-6  
- IEC 61000-4-4 - IEC 61000-4-8  
- IEC 61000-4-11

**Low Voltage Directive:** EN 60950  
(73/23/EEC)

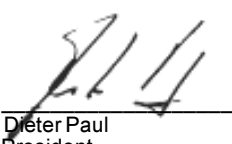
**Safety Standards:** CAN/CSA-C22.2 No. 950-95  
**CSA (NRTL/C)** UL 1950, Third Edition

**TUV:** EN 60950: 1992+A1+A2+A3+A4+A11

**EMI Standards:** FCC Part 15, Class A

**EMC Standards:** AS/NSZ 3548 Information Technology Equipment

**Year of Manufacture:** 2002

Signature:   
Full name: Dieter Paul  
Position: President

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## **Important Safety Instructions**

1. Read all these instructions.
2. Save these instructions for later use.
3. Follow all warnings and instructions marked on the product.
4. Do not use this product near water.
5. This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
6. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risk. Refer all servicing to service personnel.

## **Wichtige Sicherheitshinweise**

1. Diese Hinweise sollten vollständig durchgelesen werden.
2. Diese Hinweise für einen späteren Gebrauch aufbewahren.
3. Allen auf dem Gerät angebrachten Warnungen und Hinweisen folgen.
4. Das Gerät nicht in der Nähe von Wasser verwenden.
5. Das Gerät nur mit dem Aufkleber bezeichneten Netzspannung betreiben. Bei Fragen über die Art der Netzspannung sollte der Händler oder das Energieversorgungsunternehmen zu rate gezogen werden.
6. Nicht versuchen das Produkt selbst zu reparieren. In allen Produkten existieren gefährliche elektrische Spannungen. Nicht das Gehäuse öffnen.
7. Wartungsarbeiten nur von qualifizierten Kundendienstpersonal ausführen lassen.

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**NOTICE:** This User's Guide is subject to periodic updates without notice. While reasonable efforts have been made to ensure accuracy of this document, StorCase Technology, Inc. assumes no liability resulting from errors or omissions in this publication, or from the use of the information contained herein.

Please check the StorCase web site at <http://www.storcase.com> or contact your StorCase representative for the latest revision of this document.



## INTRODUCTION

### Packaging Information

The StorCase Technology Data Silo® external expansion chassis is shipped in a container designed to provide protection and prevent damage during shipment. The Data Silo was carefully inspected before and during the packing procedure at the factory. Evidence of any damage to the Data Silo should be reported to the shipper immediately.

If the wrong Data Silo model has been received, please call your reseller or StorCase at (800) 435-0642 to arrange for a Return Material Authorization (RMA). StorCase cannot accept returns which do not display an RMA number on the outside of the package. Return the unit with all the original packing materials.

Before removing any component from its packaging, discharge any static electricity by touching a properly grounded metal object.

### Serial Number

The Data Silo is labeled with a serial number. This number must be reported to the StorCase Customer Service Representative in order to receive a Return Material Authorization (RMA) for warranty claims. Locate the serial number label and record the number in the space provided below.

**Serial Number:**

## General Description

**WARNING:** The DS322 contains NO USER SERVICEABLE PARTS inside the unit. Refer ALL servicing to qualified service personnel!

The StorCase Technology **Data Silo® DS322** 2-bay expansion chassis with FireWire (IEEE-1394) interface and Data Express® DE110 removable drive enclosures provide durable and reliable mounting for two (2) 3.5" form factor, low-profile (1" high) Ultra ATA/100 drives. It is downward compatible with earlier technology IDE drives.

The DS322 is available in a 2U rack mount, dual bay configuration (Figure 1). Each chassis is constructed of rugged steel and is equipped with one (1) 65W auto-ranging power supply, chassis status LED, two (2) adjustable-speed blowers, and all necessary internal wiring and drive mounting hardware.

The DS322 comes standard with two (2) dual port FireWire (IEEE-1394) interfaces, which allow for single or dual host configurability.



*Figure 1: Data Silo DS322*

This User's Guide describes the steps required for installing drive(s) into the Data Silo external expansion chassis. This guide is intended to supplement documentation provided with the host computer system, the operating system, and the drive(s) to be installed within the Data Silo.

*Features:*

- 2U rack mount enclosure
- Includes two (2) Data Express® DE110 removable IDE drive carriers and receiving frames
- Supports Ultra ATA/100 drives (downward compatible with earlier-technology AT/IDE drives)
- Supports drive hot swapping
- Two (2) FireWire (IEEE-1394) interfaces with multiple drive configurability
- Universal Plug and Play
- Supports FireWire high-speed transfer rates (up to 400Mbps)
- Compliant with ATA-5 and IEEE-1394 Standards
- Supports Microsoft® Windows® 98SE/2000/ME and Mac® OS generic SBP-2 drivers
- Corrosion-resistant steel construction
- Two (2) dual-speed blowers (11.3 CFM each)
- One (1) 65W auto-ranging power supply
- Audible alarm
- Includes external 10' and 20" FireWire cables
- Ideal for video editing
- Optional RAID Tool Kit software CD for Mac® OS
- 7-year warranty and free 24/7 technical support

## Front Panel

(Figure 2)

- **Data Express® DE110 Removable Drive Carrier(s) and Receiving Frame(s)** - Provides durable and reliable mounting for low-profile 3.5" Ultra ATA/100 drives (downward-compatible with earlier technology IDE drives).
- **Unit ID Number and Activity Indicator(s)** - Display the physical address of the DE110 device carrier if the carrier is *Installed and Locked* into the receiving frame or if the carrier is removed from the receiving frame. If the carrier is *Installed but not Locked* in the receiving frame, a "u" will be displayed to indicate an unlocked condition. The unit ID number is factory-set to "0" on both DE110 receiving frames.

A small dot next to the unit ID number illuminates to indicate when the host computer is accessing the data on the DE110 carrier. This dot will flash during communication with the host computer.

- **Key Lock/Drive Power Switch(es)** - Perform three functions. The key switch assures proper seating of the drive carrier within the receiving frame, turns power to the drive on and off, and prevents unauthorized removal or installation of the carrier.

**NOTE:** Disable FireWire device on host computer desktop *before* turning OFF power (simply right-click on FireWire Icon located in the System Tray and "disconnect").

- **Chassis Status LED/Audio Indicator** - Provides the following operating information:  
Green = Power ON  
Flash Red = Fan Failure (alarm will sound)
- **Chassis Handle(s)** - Provide a sturdy grip for the installation and removal of the rack-mount chassis.
- **Power Switch** - Rocker switch controls power to the DS322 chassis.

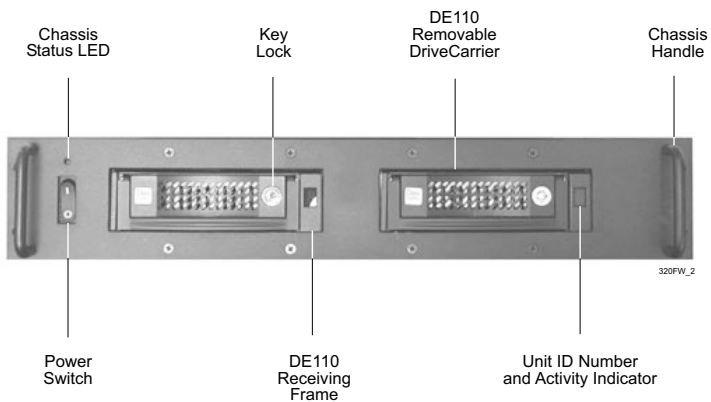


Figure 2: DS322 Front Panel

## Rear Panel

(Figures 3 & 4)

- **FireWire Interfaces** - Connect to a FireWire (IEEE-1394) device via FireWire cable (provided). Dual connectors allow for single or dual host configurability. Refer to section "*Typical FireWire Configurations*" for further information.
- **Blower(s)** - Two (2) blowers provide ample chassis ventilation (11.3 CFM each).
- **Blower Speed Selector Switch** - High and low speed. High speed (factory-default) is recommended for high performance (10K RPM and higher) drives.
- **A/C Power In** - Accepts U.S. and other available international standard power cords.

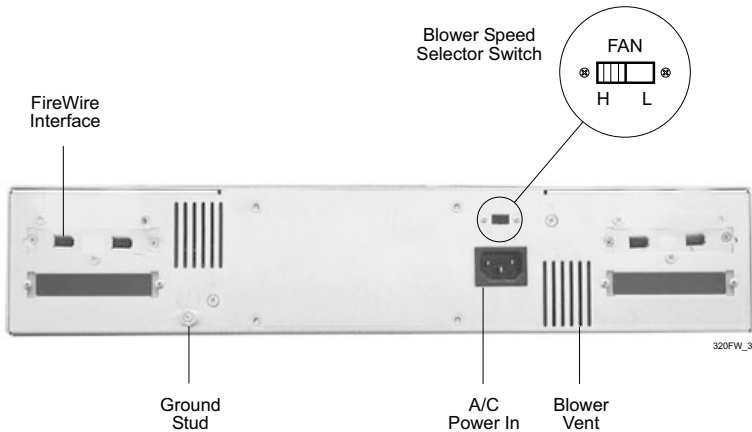
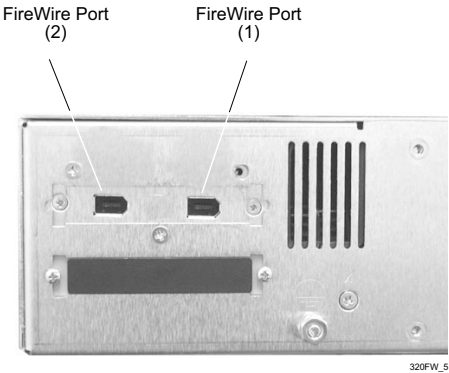


Figure 3: DS322 Rear Panel



*Figure 4: Enlarged View of the FireWire Interface*

## INSTALLATION

**CAUTION:** The DS322 chassis contains NO USER SERVICEABLE parts inside the unit. Refer ALL servicing to qualified personnel!

**NOTE:** Refer to the *Data Silo DS322 User's Guide* and *Data Express DE110 User's Guide* for additional operating and installation information. Also refer to the disk manufacturer's documentation for specific information regarding the disks.

### Drive Preparation

1. Remove the drive from its protective packaging.
2. **Plastic Drive Bezel:** If the drive came equipped with a plastic front bezel, it must be removed before installing the drive into the drive carrier.
3. In most cases, your drive will be factory-configured as a Master Drive using a jumper option on the drive itself. StorCase however, recommends reconfiguring the drive to **Cable Select** instead. This can be done by configuring the jumper option on the drive itself (refer to the drive manufacturer's documentation for further information).

**NOTE:** Since specifications (specifically, pin assignments) between drive manufacturers may vary, please refer to your drive manufacturer's documentation for exact information regarding Cable Select configuration.



## Drive Installation

1. Attach the DC power cable (from the Drive Carrier Board) to the drive (Figure 5).
2. Carefully insert the drive into the carrier. Slide the drive towards the Drive Carrier Board, so that the I/O connector on the drive mates with the connector on the Drive Carrier Board (Figure 5). **Make sure that the DC power cable is not pinched.**
3. Fasten the drive into place with four (4) #6-32 Phillips Flat Hd. screws (Figure 5).
4. Install the provided drive cover (Figure 6).

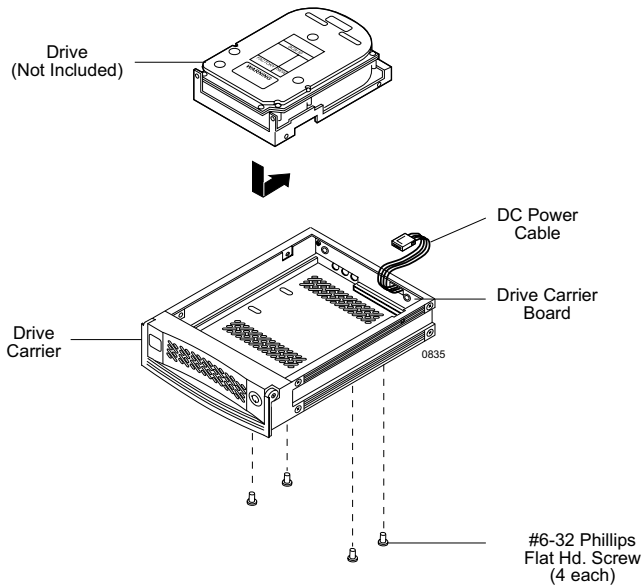


Figure 5: Drive Installation Assembly

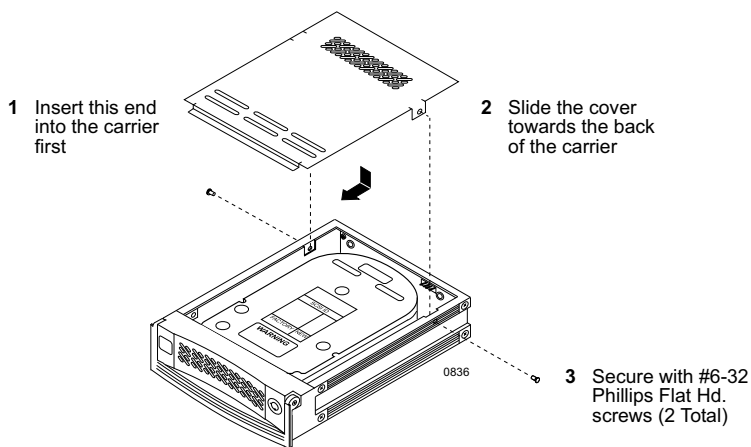


Figure 6: Drive Cover Installation

5. The DE110 drive carrier is now ready to be inserted into the receiving frame.

**NOTE:** The lock on the DE110 carrier functions as a lock and a DC power switch for the carrier unit. The lock must be engaged in order to supply power to the carrier and installed drive.

6. Reboot the computer. The new disks is now ready for use, although it may have to be formatted or initialized prior to use with your operating system and applications software.

**WARNING:** Unlocking the carrier unit switches DC power OFF to the drive. Since disk drives require a short amount of time to spin down, allow about 15 seconds before pulling the carrier unit out of the receiving frame to avoid possible damage to the drive.

**NOTE:** Disable FireWire device on host computer desktop *before* turning OFF power (simply right-click on FireWire Icon located in the System Tray and "disconnect").

## Typical FireWire Configurations

**NOTES:**

The installation, configuration, and use of the StorCase Data Silo DS322 FireWire-IDE chassis requires a certain level of expertise and experience on the part of the user/integrator. Since there are many configuration options and variables (ie. host platforms, applications, etc), only general/typical configuration guidelines will be discussed in this User's Guide.

One (1) 10' FireWire cable and one (1) 20" FireWire cable are provided with *each* DS322 FireWire-IDE chassis.

### Typical Single Host Configurations

**NOTE:**

Depending on configuration, additional FireWire cabling may be required. Contact StorCase for further ordering information.

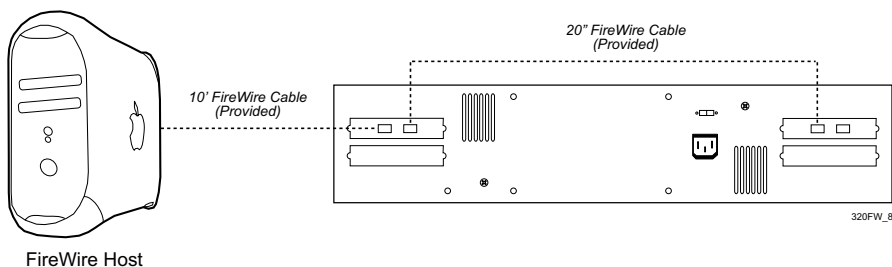


Figure 7: Typical Single Host Connection to One Data Silo

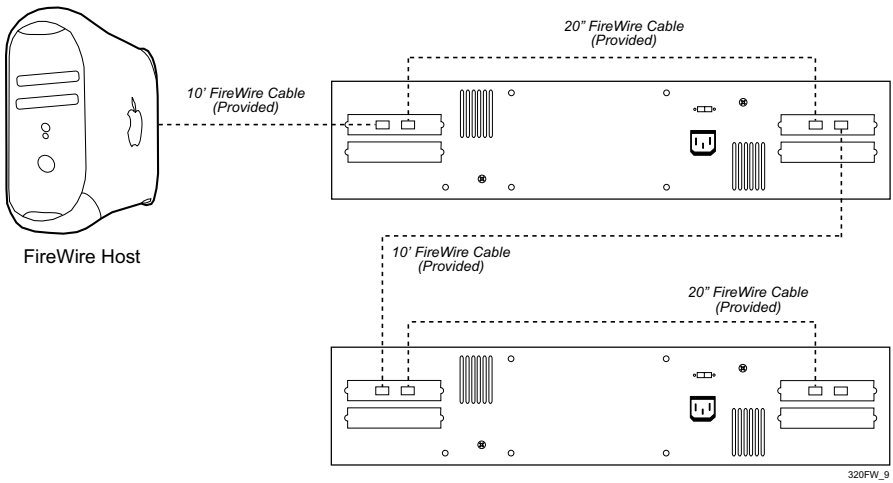


Figure 8: Typical Single Host Connection to Multiple Data Silos

## Typical Dual Host Configurations

**NOTE:** Depending on configuration, additional FireWire cabling may be required. Contact StorCase for further ordering information.

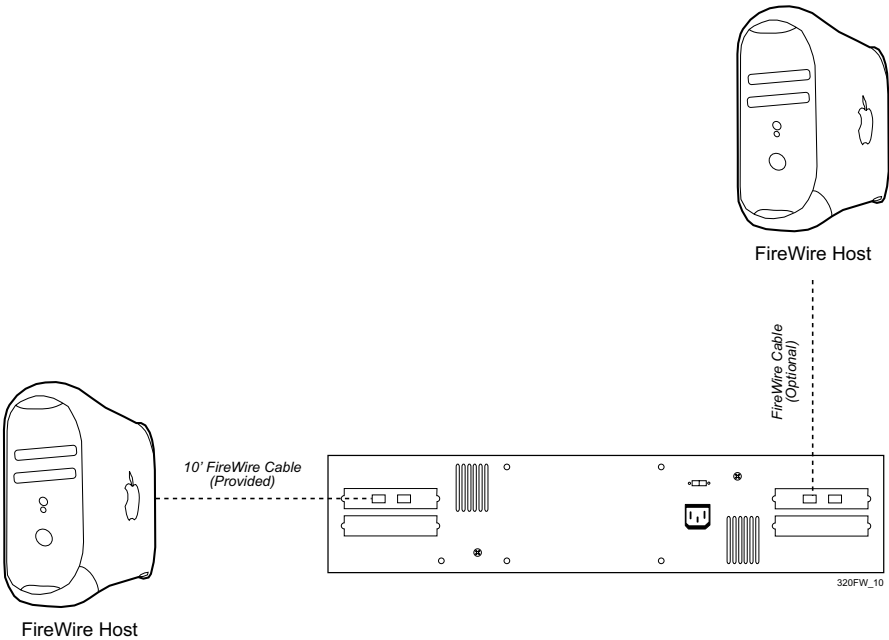


Figure 9: Typical Dual Host Connection to One Data Silo

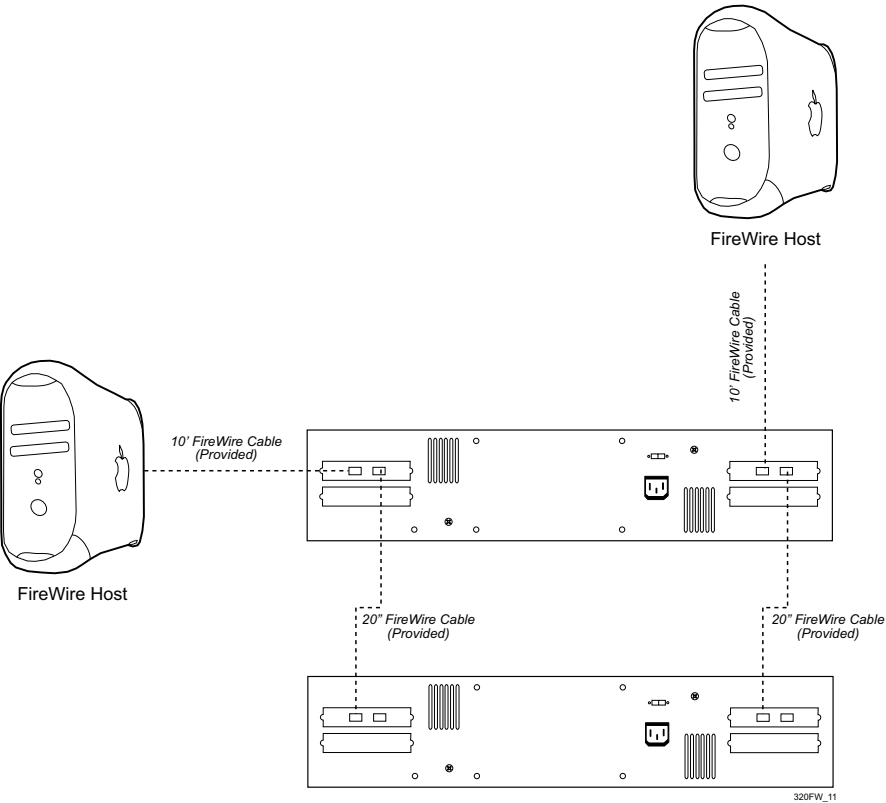


Figure 10: Typical Dual Host Connection to Multiple Data Silos

## **APPENDICES**

# Appendix A - Specifications/Dimensions

The following DS322 specifications and dimensions are provided for reference only.

Environmental Specifications		
	Operating	Storage
Ambient Temperature	0° C to 40° C	-40° C to 70° C
Relative Humidity <sup>(1)</sup>	10% to 80%	10% to 90%
Altitude	-1000 to 10,000 ft	-1000 to 40,000 ft
	-305m to 3048m	-305m to 12195m
Shock <sup>(2)</sup>	10g	60g

<sup>(1)</sup> Non-condensing with maximum gradient of 10% per hour

<sup>(2)</sup> 11 msec pulse width 1/2 sine wave

Physical Specifications	
Height	3.35" (85.1mm)
Width	16.92" (429.8mm)
Depth	14.00" (355.6mm) <sup>(1)</sup>
Weight	20.0 lbs (9.1kg) <sup>(2)</sup>

<sup>(1)</sup> Includes front bezel

<sup>(2)</sup> Total weight including 2 DE110s

Compliance	IEEE-1394 & ATA-5
Max. Transfer Rate	up to 400Mbps
Max. Cable Length	4.5m (14.75 ft)

Electrical Specifications	
(1) Auto Ranging 65 Watt (112W Peak*) Power Supply	
AC Input	100VAC - 240VAC, 50-60Hz
DC Output Continuous	5V at 3.5A, 12V at 4A

\* 5 sec. maximum

Chassis Reliability/Maintainability	
MTBF <sup>(1)</sup>	500,000 Hours
MTTR <sup>(2)</sup>	5 Minutes
Preventive Maintenance	None

<sup>(1)</sup> MTBF = Mean Time Between Failure

<sup>(2)</sup> MTTR = Mean Time To Repair

Fan Air Flow	
Total for 2 Blowers (High Speed)	22.6 CFMs

320FW\_specs



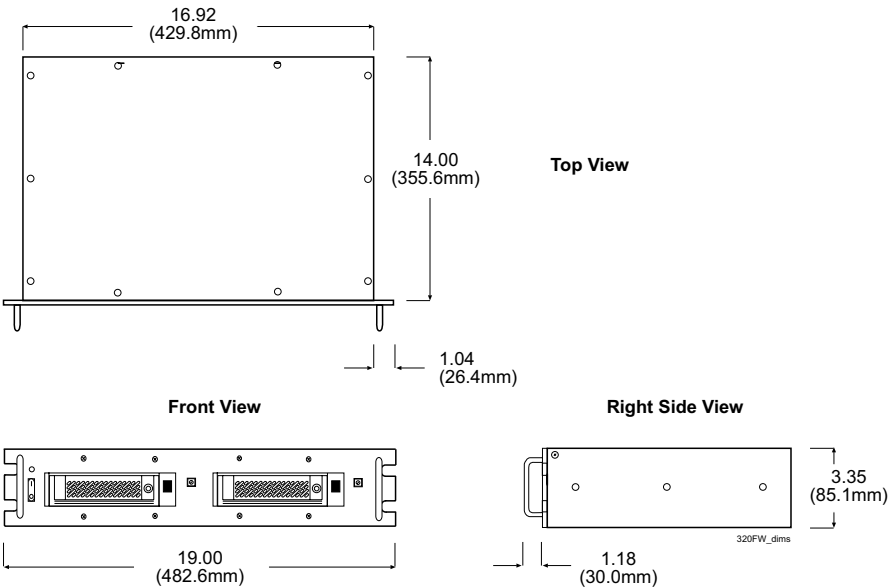


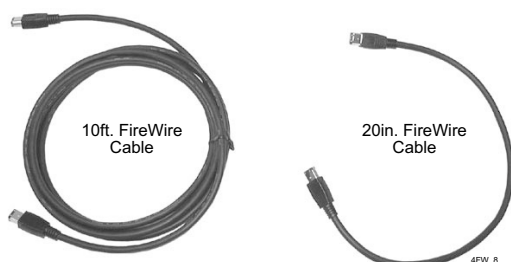
Figure A-1: DS322 Physical Dimensions  
(Dimensions are for reference only)

## Appendix B - Optional Accessories

### FireWire Cables

(Figure B-1)

Additional FireWire cables are available for the DS322. Contact StorCase for further ordering information.



*Figure B-1: FireWire Cables*

## Drive Carriers

(Figure B-2)

Additional DE110 removable drive carriers are available for the DS322 as shown in Figure B-2. Contact StorCase for further ordering information.



*Figure B-2: DE110 Drive Carrier*

## Carrying Case

(Figure B-3)

The optional molded plastic carrying case (P/N S20E101) is designed to transport the DE110 drive carrier from one site to another in a safe, impact and moisture resistant environment. Its compact dimensions, 7" long x 9" wide x 4" high, make it easy to carry and store. The foam lining is contoured to fit a single DE110 carrier. Contact StorCase for further ordering information.



320FW\_13

*Figure B-3: Carrying Case*

## Reader's Comments

Please take a few moments when your computer system is up and running to send us your ideas and suggestions for improving our products and documentation. Did the installation go smoothly for you? Are there any changes you would like us to make, either with the hardware itself, or with the installation instructions? Everyone at StorCase Technology is working toward the goal of providing you with the highest quality, most cost effective, products available on the market, and we need your comments to guide our efforts. We look forward to hearing from you soon!

Date: \_\_\_\_\_

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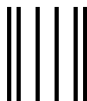
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